
New Amazonian Taxa of *Philodendron* (Araceae)

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ABSTRACT. Two taxa of *Philodendron*, *P. asplundii* Croat & M. L. Soares and *P. heleniae* subsp. *amazonense* Croat, are described as new. Both are known only from the Amazon basin, and both are widespread taxa that until now have remained unnamed. *Philodendron asplundii* is a member of *Philodendron* subg. *Philodendron* sect. *Philodendron* and is native to French Guiana, Venezuela, Brazil, Colombia, Ecuador, and Peru. While it is highly variable in terms of blade shape, it is characterized by having cataphylls that weather into a network of fine fibers with thin patches of epidermis and blades with prominently raised cross-veins extending between the minor veins. *Philodendron heleniae* subsp. *amazonense* is a member of *Philodendron* subg. *Philodendron* sect. *Calostigma* subsect. *Oligocarpidium* and is native to Colombia, Ecuador, Peru, and Bolivia. It is characterized by its scandent habit, the moderately elongate reddish brown-drying internodes, subterete petioles, narrowly ovate, subcordate yellow-brown drying blades, and clusters of up to 5 small whitish inflorescences.

Key words: Amazon, Araceae, hemiepiphyte, *Philodendron*.

Philodendron asplundii Croat & M. L. Soares, sp. nov. TYPE: Ecuador. Napo: vicinity of Baeza, on steep slopes above town of Baeza and road between Baeza and Lago Agrio (Nuevo Loja), virgin forest at edge of pastures, 2500 m, 19 Dec. 1979, T. B. Croat 49444 (holotype, MO-2737423-24; isotypes, COL, F, INPA, K, M, NY, QCA, QCNE, US). Figures 1, 2, 3.

Planta hemiepiphytica; internodiis (2)4–8 cm longis, (0.6)3.0–5.0 cm diam.; cataphyllis 21–44 cm longis; acute 2-costatis vel D-formibus, persistentibus intactis in fibras tenues lacerantibus. Folium petiolo subtereti, 17–60(100) cm longo; lamina plerumque anguste ovato-triangulari vel late ovata, interdum truncata, 17–49(68) cm longa, 7.6–36.0 cm lata. Inflorescentiae usque ad 8 in quaque axilla; pedunculo 3.0–15.5 cm longo; spatha 8.0–14.5(17.0) cm longa, tubo 3.0–5.3 cm longo, 2.0–3.6 cm diam., viridi vel pallide externe, interne interdum pallide rubro, lamina alba vel flava; spadice usque ad 13 cm longo, parte pistillata ca. 1.9–2.2 cm longa, ca. 1.4 cm diam. Ovarium 4-

ad 7-loculare; ovulis ca. 25 in quoque loculo. Baccae flavidae subaurantiacae vel viridi-albae.

Appressed-climbing hemiepiphyte to 1–3 m above ground, rarely terrestrial; stems to 1 m long; internodes short, (2)4–8 cm long, (0.6)3–5 cm diam.; cataphylls 21–44 cm long, faintly to sharply 2-ribbed to sharply D-shaped, green or green-tinged weakly with red or purple, drying brown with distinct striations, persisting intact to semi-intact and dilacerating into a net of fine fibers with mucilage (with thin patches of epidermis), epidermis brown to rusty-brown; petioles terete to obtusely flattened adaxially, 17–60(100) cm long (av. 35.7 cm), 0.54–1.69 times longer than blade (av. 1.08 times longer), 0.6–1.2 cm diam. midway, firm, semi-glossy, gray-green to medium and dark green, sometimes dark green with darker green lines; geniculum 1.3–3 cm long, sometimes slightly darker, scurfy, slightly broader than petioles; sheath short or almost absent, up to 3 cm long; leaf blades lanceolate (probably pre-adult), narrowly ovate-triangular to broadly ovate and sometimes truncate, 17–49(68) cm long (av. 40 cm), 7.6–36 cm wide (av. 19 cm), and 1.2–3.9 times longer than wide (av. 2.4 times), acuminate at apex, subcoriaceous to coriaceous, weakly glossy to glossy, dark green and matte, slightly bicolorous above, much paler and semiglossy below, anterior lobe 37–62 cm long, margins usually broadly convex, sometimes straight, occasionally concave; posterior lobes 9–20 cm long; midrib flat, slightly paler, concolorous, and broadly convex on upper surface, raised and paler on lower surface; primary lateral veins 6 to 10 per side, 8 to 20 pairs, arising at sharp angle then spreading at 45–60° angle from midrib, gently curving toward apex, sunken above, raised and darker than surface below; minor veins obscure above, distinct or rarely indistinct below; cross-veins drying distinct; basal veins 2 to 5 per side, 1st pair free to base, 2nd & 3rd pairs often coalesced 1–2 cm; posterior rib short and straight, never naked along sinus; sinus (when present) parabolic to arcuate or subhippocrepiform.



Figure 1. *Philodendron asplundii* Croat & M. L. Soares. Clockwise from top left. —Habit (Croat 49444, type). —Stem showing petioles and persistent cataphylls (Croat 49444, type). —Habit showing cluster of inflorescences with one open; leaf form with prominent sunken primary lateral veins (Croat 49605). —Leaf form with weakly sunken primary lateral veins (Croat 62327).

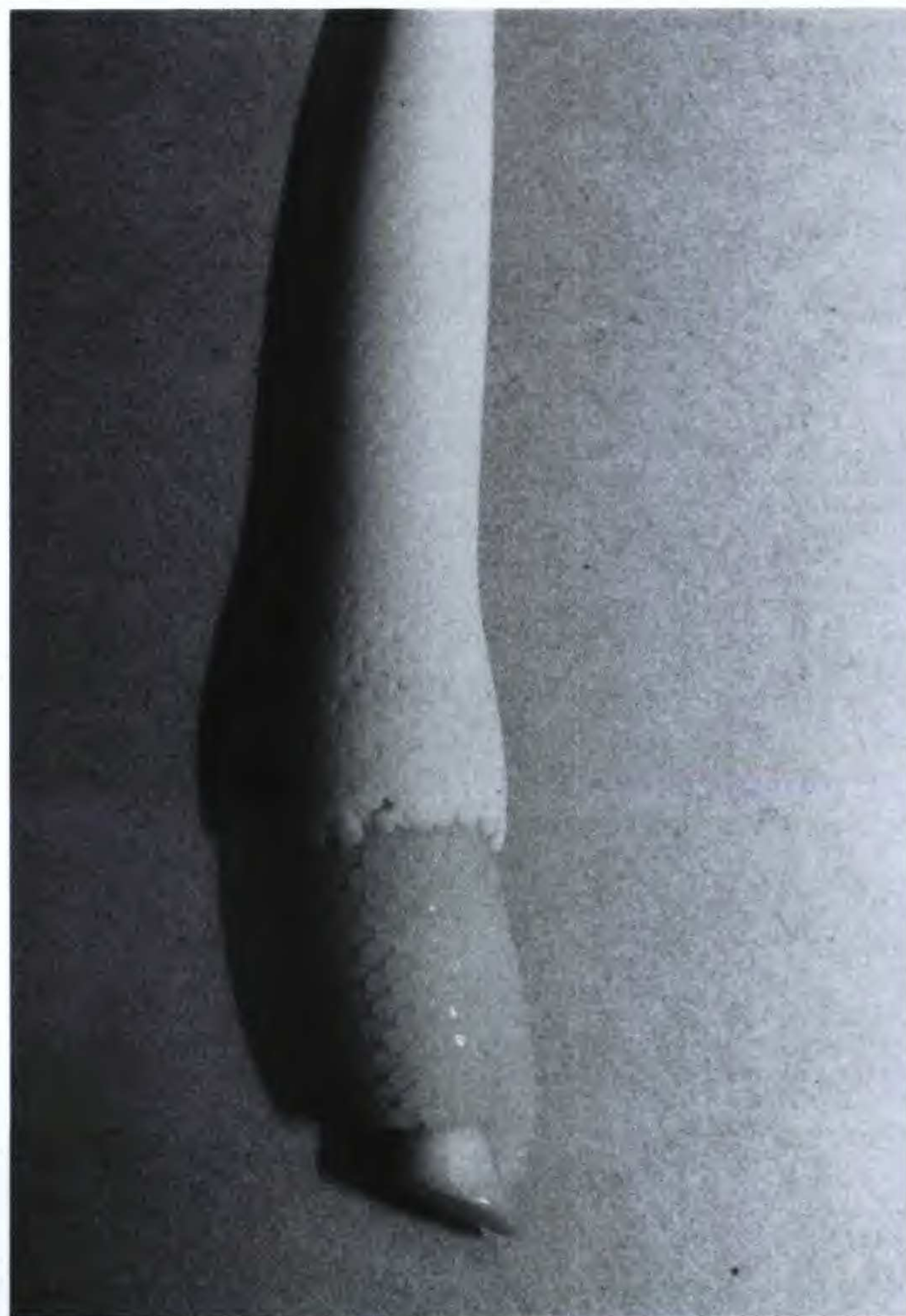


Figure 2. —Left. Petiole bases, cataphylls, and inflorescences (*Croat 75398*). —Right. Close-up of spadix (*Croat 75398*).

INFLORESCENCES up to 8 per axil; peduncles (3.0)8.0–15.5 cm long (av. 10.1 cm), 7–10 mm (drying 3–8 mm) diam., terete to weakly flattened, conspicuously striate, erect to somewhat spreading, green with paler streaks, white at base, tinged red; spathe 8–14.5(17) cm long, tapering toward apex with spathe sometimes turned upward from peduncle; spathe tube 3–5.3 cm long, 2–3.6 cm diam., green to pale green with white streaks outside, whitish to pale green or light red inside with translucent resin canals, these eventually with pale yellow resin in lower 2/3 of tube; spathe blade white to yellowish white, sometimes bent backward about midway at anthesis (*Croat 49605*); spadix 7.5–13 cm long, female portion 1.9–2.2 cm long, 1.2–1.4 cm diam., greenish white to white or pale yellow-green; male portion creamy-white to white, 3.5–8.5 cm long, 1 cm diam. 1 cm above base, 7 mm diam. 1 cm below tip; sterile male portion ca. 1 cm long, 1.4–1.6 cm diam.; sterile male flowers 1.75 mm long, 1.75 mm diam., fertile male flowers 1.5–2.4 mm long, 1.3–1.5 mm diam., narrowed toward base, stamens 3 to 5 per flower; pistils 1.5–3 mm long, 1–2 mm diam., 4- to 6-locular, drying dark tan; style 0.6–0.8 mm long, 1.25 mm diam.; stigma depressed-globular, 1–1.2 mm high; style irregularly

circular in outline with a central indentation and usually 4 to 6 indentations in a circle around a central pore (these corresponding to the usual number of locules), drying shield-like, ca. 2 mm diam., extending slightly over margin of ovary; locules 4 to 7 per ovary, 2.1 mm long; ovules hemi-anatropous, ca. 25 per locule, 0.4–0.5 mm long; axile placentation, biseriate; funicle 0.3–0.4 mm long. **INFRUCTESCENCE** with berry yellowish to orangish or greenish white, seeds 1 mm long, 0.5 mm wide, with 8 to 10 longitudinal striations (ridges), narrowing near chalazal end, drying tan.

Philodendron asplundii is restricted to the Amazon basin and ranges from southern Venezuela (Amazonas) and French Guiana to Brazil (Acre, Amazonas), Colombia (Putumayo, Amazonas, Caquetá), Ecuador (Sucumbíos, Napo, Pastaza, Morona-Santiago), and Peru (Amazonas, Loreto, San Martín, Huanuco, Pasco) at 150–2500 m elevation in *Tropical moist forest (T-mf)* and *Premontane wet forest (P-wf)* (apparently preferring the latter based on the number of collections). Life zone classifications are after Holdridge (1967).

Philodendron asplundii is a member of *Philodendron* subg. *Philodendron* sect. *Philodendron* and

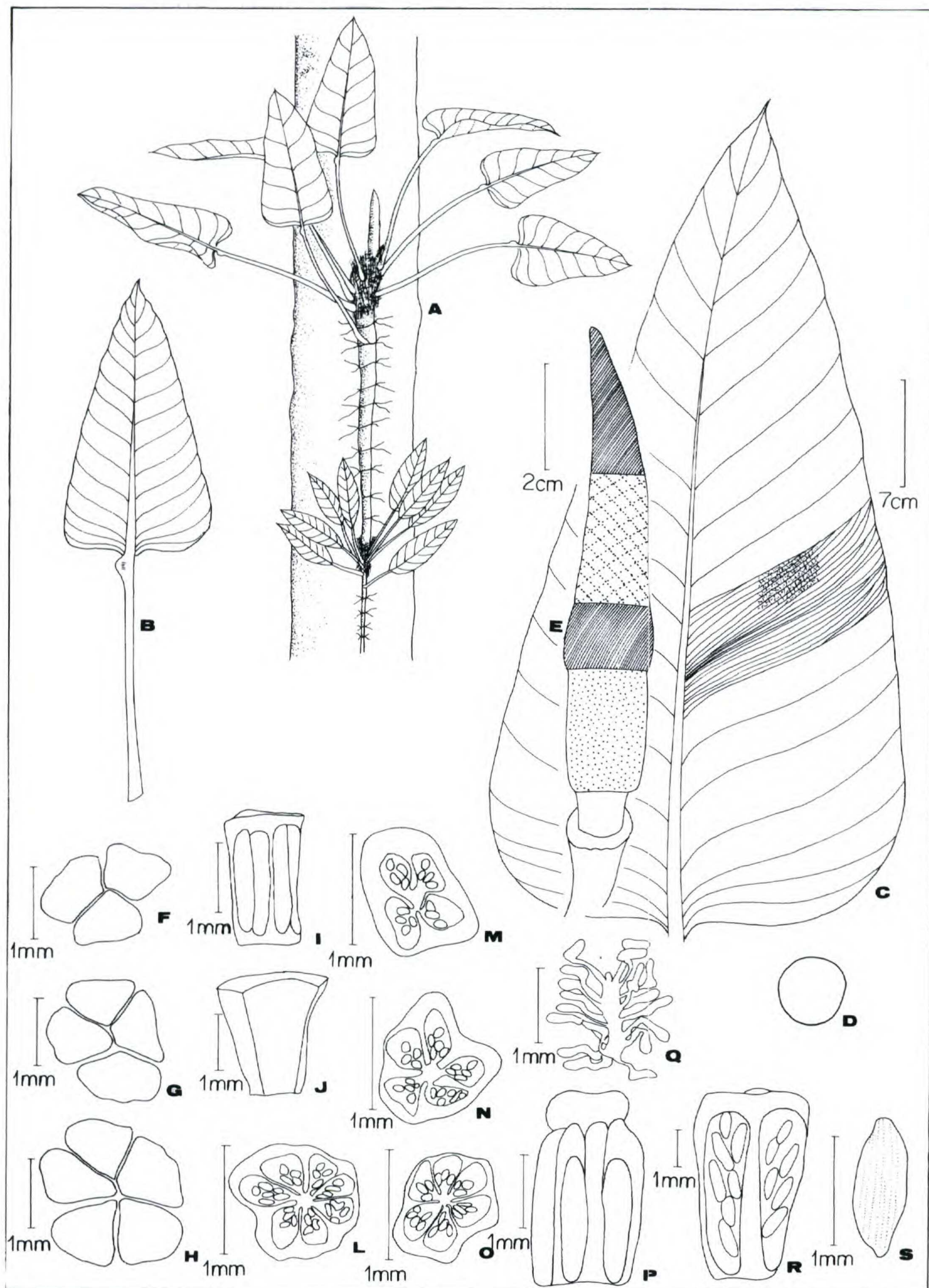


Figure 3. *Philodendron asplundii*.—A. Habit. —B. Leaf. —C. Leaf blade showing details of venation. —D. Petiole in cross section. —E. Inflorescence with spathe removed in face view showing (basipetally) apical sterile portion, fertile staminate portion, sterile staminate portion, pistillate portion, stipe, spathe scar and peduncle. —F–H. Apical view of staminate flowers. —I. Face view of stamens. —J. Face view of staminoid. —L–O. Cross sections of ovaries showing 7, 4, 5, and 6 locules. —P. Longitudinal section of gynoecium. —Q. Placenta with funicles and ovules. —R. Longitudinal section of berry. —S. Seed. Drawing by M. L. C. Soares.

is highly variable in blade shape. It can be distinguished by the prominent cross-veins visible on fresh veins, which are especially noticeable upon drying, and by the sharply D-shaped to sharply 2-ribbed cataphylls, which persist as fine fibers and epidermal fragments. It is most closely related to *P. colombianum* R. E. Schultes, which differs by being terrestrial, having smaller, nearly rounded blades, a V-shaped sinus, and smaller inflorescences with shorter, more globular spathe tubes.

The species was first collected in 1929 by E. P. Killip and A. C. Smith in the Río Huallaga valley in the Loreto Department of Peru and was next collected by Eric Asplund in 1956 in Ecuador. Since existing names in *Philodendron* preclude using the names of either Killip or Smith, the species is named in honor of Eric Asplund. Asplund was one of the earliest collectors in Ecuador and was responsible for collecting many new species of Araceae.

One collection (*Holm-Nielsen et al.* 22723) referred to the inflorescence as being red, which seems highly unlikely for this species.

Paratypes. BRAZIL. **Acre:** Serra da Moa, *Prance et al.* 12163A (NY); Rio Javari, behind Palmeiras Army Post, 5°08'S, 72°49'W, *Lleras et al.* P16991 (NY); road between Cruziero do Sul and Rio Branco, 44 km E of Cruzeiro do Sul, Fazenda da Dona Cabuca, 7°38'S, 72°35'W, 150 m, *Croat* 62327 (CM, K, MEXU, MO, US). **Amazonas:** Manaus, Reserva Florestal Ducke, Área 10, campina 1, próximo ao marco 517, *Soares & Silva* 196 (INPA); Barro Branco, *Soares & Silva* 205 (INPA), *Soares et al.* 251 (INPA), *Soares et al.* 272 (INPA); extremo da Reserva, *Soares & Silva* 217 (INPA); Acará, atrás do Acampamento ca. 500 m, próximo ao Igarapé, *Soares & Silva* 228 (INPA). COLOMBIA. **Putumayo:** Macoa, along S bank of Río Macoa, 1°10'N, 76°33'W, 700 m, *Croat* 51741 (MO, COL). **Amazonas:** 7 km N of Leticia near road, 100 m, *Plowman* 2444 (F, GH, K). **Caquetá:** Florencia, 420 m, *Perez Arbelaez* 713 (US). ECUADOR. **Morona-Santiago:** road between Macas and Puyo, 31 km N of Macas, 28.5 km N of bridge over Río Upano, 2°01'S, 77°56'W, 1125 m, *Croat* 72795 (COL, HUA, MO, NY, US); road between Gualaquiza and Zamora, 5 km S of El Pangui, 4°21'S, 78°50'W, 800 m, *Croat* 50815 (JBGP, MO). **Napo:** vía Coca–Lorento–Hollín, sitio Huaticocha, 00°45'S, 77°29'W, 500 m, *Palacios et al.* 3570 (MO); Estación Biológica Jatun Sacha, Río Napo, 8 km al E de Misahuallí, 1°04'S, 77°36'–37'W, 400–450 m, *Palacios* 2984 (MO), 2995 (MO), 7082 (MO, QCNE), *Palacios et al.* 4919 (MO, QCNE), *Croat* 73409 (JBGP, MO, QCNE, SEL, VDB), *Cerón* 686 (MO, QCNE), 849 (MO, QCNE), 1331 (MO, QCNE), 1972 (MO, QCNE), 3578 (MO, QCNE), *Gentry et al.* 60119 (MO); Añangu, Río Napo, 00°31'S, 76°23'W, 260 m, *Lawesson et al.* 39670 (QCA); Reserva de Producción Faunística Cuyabeno, N of Laguna Grande, 00°1'S, 76°11'–12'W, 265–300 m, *Nielsen* 76338 (AAU), 76429 (AAU), 76576 (AAU), *Poulsen* 78490 (AAU), 80405 (AAU), 80730 (AAU), *Brandbyge et al.* 36138 (MO); Puerto El Carmen de Putumayo (on Río Putumayo at Colombian frontier)—Lago Agrio, vic. of Tarapoa, 76 km E of

Lago Agrio, 00°07'N, 76°23'W, 240 m, *Croat* 58628 (MO, QCA, VDB); Baeza–Lago Agrio, vic. km marker 100, 43.2 km W of Lumbacui, 20.4 km E of Estación Bomba CEPE Saltado, 70.9 km E of Baeza turnoff, 00°07'S, 77°36'W, 1460 m, *Croat* 58726 (K, MO, QCA); 72.5 km W of Lago Agrio, 1166 m, *Croat* 49519 (MO), 49542 (CM, MO); Río Oyacachi, 00°20'S, 77°55'W, 1620 m, *Croat* 50293 (MO, OOM, W); km 154.5 W of Lago Agrio, 1730 m, *Croat* 49432 (MO), 760 m, *Croat* 49510 (MO); 39 km NE of jet. of road to Tena, 19.7 km NE of El Chaco, 141 km SW of Lago Agrio, 1750 m, *Croat* 58538 (L, MO, QCA); Canton El Chaco, margen derecha del Río Quijos, Finca “La Ave Brava” de Segundo Pacheco, 00°12'S, 77°39'W, 1800–1900 m, *Palacios* 5427 (MO); Baeza–Tena, km 68, only a few km S of Baeza, 00°30'S, 77°56'W, 2000 m, *Croat* 50495 (MO, VEN); 40 km N of Archidona, 00°41'S, 77°41'W, 2000 m, *Croat* 50522 (MO); 31.9 km N of Archidona, 1660 m, *Croat* 49605 (MO), 49610 (MO); 72 km N of Archidona, 2000 m, *Croat* 49546 (CM, MEXU, MO); Baeza, 2000 m, *Besse et al.* 1505 (SEL); Reserva Etnica Huaorani, Maxus Oil Pipeline Rd., km 116, Pozo Iro, km 4, 1°04'S, 76°12'W, 240 m, *Aulestia & Mipo* 3398 (MO, QCNE); Parque Nacional Yasuní, Maxus Oil Pipeline Rd., km 32, al sur del Río Tiputini, 00°37'S, 76°29'W, 250 m, *Aulestia* 1665 (MO, QCNE); E of Estación Científica Yasuní, 00°40'S, 76°23'W, 200–20 m, *Aulestia* 43 (AAU); 200–250 m, *Aulestia* 32 (AAU, MO); 00°40'S, 76°22'W, 230 m, *Aulestia* 209 (AAU); Río Napo, 00°28'S, 76°40'W, 250 m, *Aulestia* 1808 (COL, MO, RSA, QCNE); Yasuní, Añangu, 00°31'S, 76°23'W, 270 m, *Luteyn et al.* 8999 (MO); Yasuní, Oil Pump Amo 2, 00°52'S, 76°05'W, 230 m, *Cerón & Coello* 3218 (MO, QCNE); 00°57'S, 76°13'W, 230 m, *Palacios* 2423 (MO, QCNE); Yasuní, 1–3 km E of Pontificia Universidad Católica del Ecuador Science Station, by Tiputini River, 00°53'S, 76°23.7'W, 240 m, *Acavedo-Rdgz. & Cedeño* 7341 (US); Coca (San Francisco de Orellana), *Croat* 75398 (MO), 78420 (MO); Coca–Río Tigüino, 85.8 km S of Coca and bridge over Río Napo, 1°10'S, 76°52'W, 300 m, *Croat* 72563 (K, KRAM, MO); Lago Agrio–Francisco de Orellana (Coca), 4.7 km N of Coca, 00°28'S, 76°58'W, *Croat* 50407 (MO); Hacienda Cotapino (Concepción), 550 m, *Harling et al.* 7126 (GB, MO); Proyecto Hidroeléctrico Coca, Punto ST4, Río Quijos, 10 km S of Reventador, 00°08'S, 77°30'W, 1450 m, *Palacios* 6056 (AAU, MO, QCNE); Punto ST3, along Río Quijos, 10 km S of Reventador, 00°11'S, 77°39'W, 1500 m, *Palacios* 5889 (MO, QCNE); creek 3.5 km NW of Borja, 00°24'S, 77°50'W, 1850 m, *Holm-Nielsen et al.* 26341 (AAU); Tena, *Harling* 3666 (S); Río Aguarico, 60 km downstream from San Pablo de Los Secoyas, 00°18'S, 76°W, 220 m, *Holm-Nielsen et al.* 21143 (AAU); Misahuallí, 00°03'S, 77°35'W, 500 m, *Hammel* 15987 (MO). **Napo–Pastaza:** Vera Cruz, 900 m, *Asplund* 19427 (S). **Pastaza:** Río Curaray, 2 km W of school, 1°22'S, 76°58'W, 250 m, *Holm-Nielsen et al.* 21811 (AAU); SE of airstrip, 1°22'S, 76°57'W, 250 m, *Holm-Nielsen et al.* 22244 (AAU); Río Curaray, Valle de la Muerte, 1°25'S, 76°52'W, 240 m, *Holm-Nielsen et al.* 22498 (AAU); Río Villano, Ceiba, 1°25'S, 77°02'W, 260 m, *Holm-Nielsen et al.* 22723 (AAU); Montalvo, 0–1 km NE of military camp, 2°05'S, 76°58'W, 250 m, *Lojtnant & Molau* 13350 (AAU); carretera de PETRO-CANADA, vía Auca, 115 km S of Coca, 6 km S of Río Tigüino, 1°15'S, 76°55'W, 320 m, *Zak & Rubio* 4209 (MO, QCA, QCNE); road to Tarabita and portage over Río Pastaza, 3 km from turnoff from main Puyo–Mera Road, 1000 m, *Croat* 49701 (MO). **Sucumbíos:** Lago Agrio–Puerto El Carmen de Putumayo (at Río

Putumayo on Colombian frontier), 91.7 km SE of Lago Agrio, 63.1 km SE of Dureno, 15.3 km E of Tarapoa, 00°08'S, 76°23'W, 260 m, *Croat 58574* (G, MO, QCA); Reserva Faunística Cuyabeno, N of Laguna Grande, 00°01'N, 76°11'W, 265 m, *Balslev et al. 84621* (AAU, MO); Reserva Faunística Cuyabeno S of Laguna Garzacochoa, 00°01'S, 76°11'W, 265 m, *Balslev et al. 84693* (AAU); trail to Volcán El Reventador, from km 100 on Baeza–Lago Agrio Highway, 1900 m, *Jaramillo & Grijálva 12959* (NY); Gonzalo Pizarro Canton, campo Bermejo 6 Norte, 30 km NE of Lago Agrio, 00°14'N, 77°13'W, 1050 m, *Cerón et al. 9335* (MO, QCNE, US). FRENCH GUIANA. Grand Saut along Armontabo River affluent to Oya-pock River, *Prévost 1906* (CAY). PERU. **Amazonas:** Bagua: Quebrada chichijam entsa, Río Cenepa, Monte, 920 m, *Ancuash 582* (MO); 4°55'S, 78°19'W, 320 m, *Jaramillo et al. 1164* (MO); Huambisa, Valle del Río Santiago, 65 km N de Pinglo, Quebrada Caterpiza, 2–3 km atras de la comunidad de Caterpiza, 3°50'S, 77°40'W, 200 m, *Tunqui 297* (MO), 856 (MO), *Huashikat 1807* (MO), 2061 (MO). **Huanuco:** Leoncio Prado, Tingo María, hills W side of Río Huallaga, 700 m, *Solomon 3390* (MO); Distrito Rupa Rupa, Jacintillo, Río Monzón, 680–700 m, *Schunke 10372* (CM, F, MO). **Loreto:** Alto Amazonas, Balsapuerto (lower Río Huallaga basin), 150–350 m, *Killip & Smith 28623* (F, NY, US), 28688 (NY, US); Santa Rosa, lower Río Huallaga below Yurimaguas, 135 m, *Killip & Smith 28815* (US), 28865 (NY); 2°55'S, 76°25'W, 180 m, *Vásquez et al. 2981* (MO). Maynas: 14 km SW of Iquitos, *Croat 18510* (MO); Laguna Quistacocha, 15 km, SW of Iquitos, *Solomon 3421* (MO); Iquitos, Puerto Almendra, 3°48'S, 73°25'W, 120 m, *Croat 51200* (MO), 51206 (MO); 120 m, *Revilla 3555* (MO); Asociación Agraria Paujil, 4°10'S, 73°20'W, 150 m, *Vásquez & Jaramillo 10806* (MO); Buena Suerte, (Río Itaya), *Vásquez & Jaramillo 8419* (MO); Allpahuayo, Estación Experimental del Instituto de Investigaciones de la Amazonia Peruana, 4°10'S, 73°30'W, 150–180 m, *Vásquez & Jaramillo 16369* (MO); Iquitos, km 44 carretera Iquitos–Nauta, terrenos del Comité de Reforestación Iquitos, 4°10'S, 73°20'W, 150 m, *Vásquez et al. 11969* (MO, NY, USM); carretera de Zungaro Cocha, Quebrada Shushuna, 120 m, *Rimachi 11277* (IBE); Sargento Lores, Esperanza (Río Tahuayoz), 4°10'S, 73°15'W, 120 m, *Vásquez & Jaramillo 13246* (MO); 4 km from Mishana, Río Nanay, Estación Biológico Callicebus, 150 m, *Gentry et al. 15829* (MO); Puerto Almendra at Río Nanay, *Croat 18358* (MO); Dtto. Las Amazonas, Explornapo Camp Suscari, subparcels 18–22, MacArthur Inventario, near Río Napo, 3°20'S, 72°55'W, 100–140 m, *Pipoly et al. 13035* (MO), 13047 (MO), 13722 (MO), 14524 (MO), *Vásquez & Jaramillo 16030* (MO); Pto. Almendras, (CIEFOR), 3°48'S, 73°25'W, 122 m, *Vásquez & Jaramillo 6617* (MO); Dtto. Indiana, Quebrada Yanayacu, trail from Monte Carmelo to Manati, *McDaniel et al. 21590* (IBE); Requena, Jenaro Herrera, Río Ucayali, 4°55'S, 73°45'W, *Gentry et al. 56648* (MO); 4°50'S, 73°45'W, 170 m, *Vásquez et al. 2066* (MO); Río Ucayali below Requena, *Gentry et al. 21357* (F, MO, USM); 5°05'S, 73°50'W, 180 m, *Vásquez & Jaramillo 4722* (MO). **Pasco:** Oxapampa, drainage of Río Palcazu between km 51 and 60 of new road NW of Villa Rica toward Puerto Bermudez, 10°30'S, 75°5'W, 700 m, *Gentry & Smith 36030* (MO); Palcazu valley, Cabeza de Mono, 5–6 km W of Iscozazin, 10°12'S, 75°14'W, 325 m, *Smith 3742* (MO); 10°12'S, 75°15'W, 380 m, *Foster 7929* (MO, USM); N of Iscozazin River just below native community of Alto Isco, *Salick 6128* (MO). **San Martín:** Lamas, Alonso de Alvarado, San Juan de Pacaizapa, km

72 carretera Tarapoto–Moyobamba, 1000–1050 m, *Schunke 9620A* (CM, MO); Mariscal Caceres, Uchiza, Azpuzana, near San Martín–Huanuco border, 500 m, *Plowman 5936* (GH); San Martín, road from Moyobamba to Chachapoyas, km marker 447 (447 km E of Olmos), N of Rioja, Rioja–Naranjos, 5°55'S, 77°13'W, 700 m, *Croat 58147* (MO, USM), 58154 (CM, K, MO, USM); Tarapoto–Yurimaguas, 10.6 km from junction in road to Río Huallaga, 6°30'S, 76°21'W, 530 m, *Croat 58108* (CAS, MO, RSA, SEL, USM). VENEZUELA. **Amazonas:** upper Río Yaciba between Base Camp and White-Water affluence, 100–140 m, *Maguire et al. 37445* (NY).

Philodendron heleniae subsp. **amazonense**

Croat, subsp. nov. TYPE: Ecuador. Napo: Parque Nacional Yasuní, Pozo Petrolero Daimi, 00°55'S, 76°11'W, 26 May–8 June 1988, *C. E. Cerón & Hurtado 4246* (holotype, MO–3636060; isotypes, K, QCNE, US). Figure 4.

Planta plerumque hemiepiphytica, raro terrestris; internodiis 1–7(10) cm longis, 1.0–2.5 cm diam.; cataphyllis 11–16 cm longis, acute 2-costatis, deciduis. Folium petiolo tereti vel D-formi, 8.5–29.0 cm longo, 6–8 mm diam.; lamina anguste ovata vel oblongo–elliptica, 34–55 cm longa, (16)18–25 cm lata, in sicco flavidobrunnea vel viridigrisea. Inflorescentiae 1 ad 5 in quoque axilla, pedunculo 2–7.5 cm longo, 4–6 mm diam.; spatha 4–10 cm longa, viridi vel alba. Ovarium (5- ad) 6- ad 9-loculare; ovulis (1 ad) 3 vel 4 in quoque loculo.

Usually hemiepiphytic, rarely terrestrial; vining or appressed-climbing; stem appressed-climbing to somewhat scandent; internodes smooth, 1–7(10) cm long, 1.0–2.5 cm diam., as broad as long or much longer than broad, flattened on one side with sharp to blunt marginal ridges, matte, gray-green, turning brown, drying reddish brown, the epidermis smooth or irregularly folded and ridged, drying with longitudinal folds, sometimes peeling free upon drying; cataphylls 11–16 cm long, sharply 2-ribbed, green, deciduous; petioles 8.5–29.0 cm long, 6–8 mm diam., ± terete to D-shaped, obtusely flattened and weakly sulcate adaxially, firm, medium green, drying reddish brown; blades narrowly ovate to oblong-elliptic, subcoriaceous, strongly bicolorous, acuminate at apex, usually weakly and unequally subcordate, sometimes obtuse, truncate or rounded at base, 34–55 (av. 45.4) cm long, (16)18–25 (av. 19.8) cm wide, 1.8–2.8 times longer than wide (av. 2.3); upper surface dark green, semiglossy, drying smooth and yellow-brown to gray-green, lower surface much paler, weakly glossy to matte, drying yellowish to reddish brown, the secretory canals typically only visible on very young leaves; sinus broadly V-shaped to arcuate or lacking, to 1.5 cm deep when present; midrib flat to broadly convex, pale green above, bluntly acute and thicker than broad, slightly paler than surface below; basal veins lacking; primary lateral veins 6 to 10 per side, de-



Figure 4. *Philodendron heleniae* subsp. *amazonense* Croat. Clockwise from top left. —Habit (Croat 49632). —Stem close-up showing petiole bases and cataphyll scars (Croat 49632). —Leaves in face view (Croat 49632). —Stem with leaf axils and two inflorescences (Croat 58986).

parting midrib at a 40–60° angle, weakly sunken above, weakly raised and darker than surface below; minor veins weakly visible, arising from the midrib only, the surface smooth below. INFLORESCENCES 1 to 5 per axil; peduncle 2–7.5 cm long, 4–6 mm diam., green, obtusely flattened on one side; spathe greenish or white throughout, whitish on inner surface, semiglossy, cuspidate at apex, sometimes blade white and tube green, 4–10 cm long, up to 5 mm diam.; spadix sessile, slightly shorter than the spathe; pistillate portion pale green to creamy white, extending to 2/3 the length of spadix shortly after anthesis; pistils (5)6- to 9-locular; locules (1)3- to 4-ovulate; staminate portion cream to white, cylindrical or clavate. INFRUCTESCENCE unknown.

Philodendron heleniae ranges from Panama to Ecuador, from 20 to about 1040(–1450) m elevation. *Philodendron heleniae* subsp. *heleniae* ranges down the Pacific slope of South America. *Philodendron heleniae* subsp. *amazonense* is endemic to the Amazon basin ranging from Ecuador (Morona-Santiago, Napo, Pastaza, Sucumbíos) to Peru and Bolivia at 200 to 1000 m elevation in *Tropical moist forest (T-mf)*, *Tropical wet forest (T-wf)*, and *Premontane wet forest (P-wf)*. It differs from *P. heleniae* subsp. *heleniae* in having generally fewer inflorescences per axil, usually white rather than reddish spathes, smooth rather than coarsely pustular lower blade surfaces, and the near lack of secretory cells in mature leaves.

Philodendron heleniae subsp. *amazonense* is a member of *Philodendron* subg. *Philodendron* sect. *Calostigma* subsect. *Oligocarpidium*. It is characterized by its scandent habit, the reddish brown-drying internodes much longer than broad, subterete petioles, narrowly ovate, subcordate, yellow-brown-drying blades and clusters of up to 5 small whitish inflorescences.

Paratypes. BOLIVIA. **Cochabamba:** Carrasco, Parque Nacional Carrasco, 17°23'S, 64°30'W, 525 m, *Acebey* 531 (LPB, MO). COLOMBIA. **Amazonas:** Leticia, Parque Nacional Natural Amacayacu, Quebrada de Agua Pudre, 1.5 km NE of mouth of Amacayacu River, 3°47'S, 70°15'W, 200–220 m, *Pipoly* 15892 (MO, NY). ECUADOR. **Morona-Santiago:** Plan Del Milago at crossroad between Limón and Indanza, 1600–1700 m, *Harling & Andersson* 24568 (GB); Pozo petrolero “Garza” del Tenneco, 35 km (approx.) N of Montalvo, 1°49'S, 76°42'W, 260 m, *Zak & Espinoza* 4549 (MO, QCNE). **Napo:** Jatun Sacha Biological Station, Río Napo, 8 km E of Misahuallí, 1°04'S, 77°36'E, 450 m, *Cerón* 977 (COL, JAUM, MO, QCNE), 1756 (MO, QCA, QCNE), 3632 (MO, QCNE), 3742 (AAU, GB, MO, QCNE), *Neill* 8701 (MO, QCNE), *Cerón* 4567 (MO, QCNE); Parque Nacional Yasuní, La Joya de los Sachas, Maxus Oil pipeline road, km 45, 00°45'S, 76°28'W, 230 m, *Dik* 91 (B, MO, QCNE); Yasuní, Conoco oil pump “Daimi II,” 00°09'S, 76°12'W, 240 m, *Coello* 318 (MO, QCNE); Yasuní, 00°55'S,

76°11'W, 200 m, *Cerón & Hurtado* 3854 (MO, NY, QCNE, WU); Yasuní, Pozo Amo 2, 00°52'S, 76°05'W, 230 m, *Cerón* 3360 (MO, QCNE); Yasuní, Alrededores del Helipuerto de Amo Sur, 00°52'S, 76°05'W, 230 m, *Cerón* 3422 (MO); W of Alinhuahi, Cocha, 1°02'S, 77°35'W, *Bennett* 4526 (MO); Tena to past Muyuna, 2 km W of Muyuna, ca 5.7 km W of Tena, 00°01'S, 77°51'W, 500 m, *Croat* 58860 (MO, QCA); Tena to Puyo, 58.1 km N of Puyo, 600 m, *Croat* 49632 (F, MO); Canton Tena, Río Blanco community, headwaters of Río Huambuno, 6 km NNW of Ahuano, 1°S, 77°40'W, 440 m, *Kohn* 1170 (MO, WIS); Lago Agrio to Francisco de Orellana (Coco), 15 km N of Coco, 00°30'S, 76°56'W, 450 m, *Croat* 50415 (MO); Limococha, 240 m, *Madison et al.* 5458 (SEL); Río Napo, *Asplund* 10248 (S). **Pastaza:** Namoyacu at Río Curaray, 1°27'S, 76°47'W, 230 m, *Holm-Nielsen et al.* 22315 (AAU), 22317 (AAU), 22359 (AAU, MO), 22366 (AAU); road towards Canelos, 6 km E of Puyo Macas road, 25.7 km S of Puyo, 1°34'S, 77°46'W, 800 m, *Thomas & Rios* 6708 (MO, NY); along road to Canelos, (departing main Puyo–Macas road at 32 km from Puyo, 22.5 km S of Veracruz) 3.8 km from turnoff, near maintenance camp, 1°37'S, 77°51'W, 850 m, *Croat* 58986 (MO, QCA); Canton, Arco Oil pump “Moretechocha,” Río Landayacu, 75 km E of Puyo, 1°34'S, 77°25'W, 580 m, *Gudiño* 1160 (MO, QCNE); along road to Tarabita and portage over Río Pastaza, 3 km from turnoff from main Puyo–Mera Road, 1000 m, *Croat* 49682 (MO). **Sucumbíos:** Lago Agrio (Nueva Loja) to Coca (Pto. Francisco de Orellana), 26 km S of Lago Agrio, 4.6 km S of El Emo, then 2.8 km W of main Lago Agrio–Coca Road, 00°05'S, 76°54'W, 355 m, *Croat* 72528 (CM, MO, QCNE); Lumbaqui to Bonita, a few km N of Lumbaqui, *Croat* 81429. PERU. Plantación Margarita near Divisoria, 1500–1600 m, *Ferreira* 1046 (MO, USM). **Amazonas:** Bagua, Cenepa, Nuevo Nazareth, near mouth of Río Imaza, on Río Marañón, 250–300 m, *Tillett* 671–30 (GH, MYF); Bagua, Imaza, Comunidad Aguaruna de Kusú-Litra, Cerro Apág, Quebrada Kusú, 600–700 m, *Diaz et al.* 8260 (MO, WU); Monte Virgen, 800 m, Comunidad de Caterpiza, Quebrada Caterpiza, Río Santiago, 200 m, *Huashikat* 485 (MO); Río Santiago, vic. de Caterpiza 180 m, *Huashikat* 760 (MO); upper Río Cenepa, Shimpunts, *Kayap* 409 (MO); N of Cenepa above Chikan, 600–800 ft., *Berlin* 1807 (MO). **Huánuco:** Pachitea, Puerto Inca, carretera marginal 14 km from a point across the Río Pachitea from Puerto Inca, 9°31'S, 74°58'W, 350 m, *Smith* 1302 (MO, USM); Comunidad Nativa Santa Marta (about 50 km by river from Puerto Inca) on the bank of Sungaruyacu, 9°20'S, 75°15'W, 360 m, *Smith* 1233 (MO). **Loreto:** Loreto, Explorama Lodge Tourist Camp, Yanamono, 3°28'S, 72°50'W, 140 m, *Gentry et al.* 72083 (MO); 12 km SW of Iquitos, *Croat* 20085 (MO). Maynas: Río Amazonas, Isla de Aguajal, ca. 2 hrs. from Tamshiyacu, 110 m, *Rimachi* 8775 (IBE, MO), 8813 (IBE, USM); carretera Iquitos, km 60, 4°10'S, 73°30'W, 150 m, *Ruiz* 1186 (MO); vicinity of Quistococha, 200 m, *Gentry et al.* 22296 (F, MO, NY); Sargento Lores, Constancia Norte, 4°07'04"S, 72°55'17"W, 116 m, *Vasquez et al.* 23430 (MO).

Acknowledgments. Special thanks go to Maria de Lourdes da Costa Soares Morais from the INPA Herbarium, Manaus, coauthor of *Philodendron asplundii*, for the line drawing used for this publication, and for much of the detail provided for the description of the ovary, locules, and ovules.

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